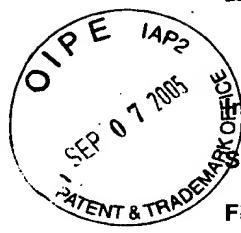


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ATTORNEY DOCKET NO. 10003512-1



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INventor(s): William D. Fisher

Serial No.: 09/771,092

Examiner: Brian R. Gordon

Filing Date: January 26, 2001

Group Art Unit: 1743

Title: FLUID DROP DISPENSING

COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Sir:

Transmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on July 8, 2005

The fee for filing this Appeal Brief is (37 CFR 1.17(c)) \$500.00.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

(a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)(1)-(5)) for the total number of months checked below:

<input type="checkbox"/>	one month	\$ 120.00
<input checked="" type="checkbox"/>	two months	\$ 450.00
<input type="checkbox"/>	three months	\$1020.00
<input type="checkbox"/>	four months	\$1590.00

The extension fee has already been filled in this application.

(b) Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account 50-1078 the sum of \$500.00. At any time during the pendency of this application, please charge any fees required or credit any overpayment to Deposit Account 50-1078 pursuant to 37 CFR 1.25.

A duplicate copy of this transmittal letter is enclosed.

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I hereby certify that this correspondence is being deposited with the United States Postal Service as ~~express~~ mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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I hereby certify that this paper is being facsimile transmitted to the Patent and Trademark Office on the date shown below.

Date of Facsimile:

Typed Name: Donna Macedo

Signature: Donna Macedo

Respectfully submitted,

William D. Fisher

By

Bret E. Field for Dianne Rees
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Express Mail No.
EV1687633314US

APPELLANTS' BRIEF Address to: Mail Stop Appeal Brief-Patents Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450	Application Number	09/771,092
	Confirmation Number	7692
	Attorney Docket No.	10003512-1
	Filing Date	January 26, 2001
	First Named Inventor	William D. Fisher
	Examiner	Brian R. Gordon
	Group Art	1743
Title: <i>Fluid Drop Dispensing</i>		

Sir:

This Brief is filed in support of Applicants' appeal from the Examiner's Rejection dated March 10, 2005. No claims have been allowed, and Claims 1-14 and 35-42 are pending. Claims 1-14 and 35-42 are appealed. A Notice of Appeal was filed on July 8, 2005.

The Board of Appeals and Interferences has jurisdiction over this appeal pursuant to 35 U.S.C. §134.

The Commissioner is hereby authorized to charge deposit account number 50-1078, reference no. 10003512-1 to cover any fee required under 37 C.F.R. §1.17(c) for filing Applicants' brief. In the unlikely event that the fee transmittal or other papers are separated from this document and/or other fees or relief are required, Applicants petition for such relief, including extensions of time, and authorize the Commissioner to charge any fees under 37 C.F.R. §§ 1.16, 1.17 and 1.21 which may be required by this paper, or to credit any overpayment, to deposit account number 50-1078, reference no. 10003512-1.

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REAL PARTY IN INTEREST

The inventors named on this patent application assigned their entire rights in the invention to Agilent Technologies, Inc.

RELATED APPEALS AND INTERFERENCES

There are currently no other appeals or interferences known to Appellants, the undersigned Appellants' representative, or the assignee to whom the inventors assigned their rights in the instant case, which would directly affect or be directly affected by, or have a bearing on the Board's decision in the instant appeal.

STATUS OF CLAIMS

The present application was filed on January 26, 2001 with Claims 1-26. During prosecution, Claims 27-42 were added and Claims 15-34 were cancelled. Accordingly, Claims 1-14 and 35-42 are pending in the present application, all of which claims are currently rejected and appealed herein.

STATUS OF AMENDMENTS

No amendments to the Claims were filed subsequent to issuance of the Final Rejection.

SUMMARY OF CLAIMED SUBJECT MATTER

The claimed invention is drawn to methods in which pulse jet firing, such as a thermoelectric or piezoelectric pulse jets, is improved. In many applications where pulse jets are used, such as for the deposition of fluids used to build up chemical moieties, a high degree of fidelity of the firing of the fluid from the pulse jet is required. The methods claimed in the instant application include the step of striking the pulse jet at least once to improve the pulse jet firing ability.

Below is a description of each appealed claim. Where support for each claim can be found in the specification is listed in parentheses, and is given as exemplary, and not intended to be exhaustive.

Independent Claim 1 claims a method for dispensing drops from a pulse jet and striking the pulse jet at least once, where the pulse jet comprises a chamber and a thermoelectric or piezoelectric ejector in the chamber. (See the specification pg 3, lines 17-18; pg 7, lines 15-20; pg 13 lines 18-19.) Claim 2 depends from Claim 1 and specifies that the pulse jet is struck intermittently multiple times. (See the specification pg 3, lines 18-20; pg 8 lines 3-4.) Claim 3 depends from Claim 2 and specifies that the pulse jet includes a housing enclosing the chamber, where the housing has an opening for drops, and where the housing is struck on the outside surface with a member. (See the specification pg 7, lines 15-18; pg 7 line 30 to pg 8line 1.) Claim 4 depends from Claim 3 and specifies that the housing is struck in the direction in which the drops are ejected from the pulse jet. (See the specification pg 7; lines 27-30; pg 8 lines 3-4.) Claim 5 depends from Claim 3 and specifies that the rate of striking is 0.2 to 10 strikes/second. (See the specification pg 13, lines 21-22.) Claim 6 depends from Claim 3 and specifies that the rate of striking is 1 to 5 strikes/second. (See the specification pg 13; lines 19-21.) Claim 7 depends from Claim 3 and specifies that the strikes deliver between 10 mJ to 150 mJ. (See the specification pg 13; line 21.) Claim 8 depends from Claim 3 and specifies that the strikes deliver between 50 mJ to 100 mJ. (See the specification pg 13; lines 21-22.) Claim 9 depends from Claim 2 and specifies that the pulse jet includes a thermoelectric ejector in the chamber. (See the specification pg 7 line 18; pg 11 line 10.) Claim 10 depends from Claim 2 and specifies that the pulse jet includes a piezoelectric ejector in the chamber. (See the specification pg 7 line 18; pg 11 line 10.)

Independent Claim 11 claims a method of fabricating an array of chemical moieties on a substrate by dispensing drops from a pulse jet and intermittently striking the pulse jet multiple times, where the pulse jet comprises a chamber and a thermoelectric or piezoelectric ejector in the chamber. (See the specification pg 9

line 29 to pg 13 line 19.) Claim 12 depends from Claim 11 and specifies that the multiple strikes are applied between the dispensing of drops by the pulse jet. (See the specification pg 13, lines 27-30.) Claim 13 depends from Claim 11 and specifies that the chemical moieties are polynucleotides of different sequences. (See the specification pg 5, line 21; pg 6, lines 8-25; pg 8, line 27 to pg 9, line 28.) Claim 14 depends from Claim 13 and specifies that the polynucleotides are DNA. (See the specification pg 2, lines 12-17; pg 6, lines 2-3.)

Claims 35 and 36 depend from Claims 1 and 11 respectively, and specify that the striking improves pulse jet firing ability relative to the situation in which the striking does not occur. (See the Specification at page 3, lines 28-30, among other locations).

Independent Claim 37 claims a method for dispensing drops from a pulse jet and striking the pulse jet at least once, where the pulse jet includes a rigid chamber and a thermoelectric or piezoelectric ejector in the chamber. (See the specification pg 3, lines 17-18; pg 7, lines 15-20; pg 13 lines 18-19.) Claim 38 claims a method according to Claim 37, wherein the pulse jet is struck intermittently multiple times. (See the specification pg 3, lines 18-20; pg 8 lines 3-4.)

Independent Claim 39 claims a method of fabricating an array of chemical moieties on a substrate by dispensing drops from a pulse jet and intermittently striking the pulse jet multiple times, where the pulse jet includes a rigid chamber and a thermoelectric or piezoelectric ejector in the chamber. (See the specification pg 9 line 29 to pg 13 line 19.) Claim 40 depends from Claim 39 and specifies that the multiple strikes are applied between the dispensing of drops by the pulse jet. (See the specification pg 13, lines 27-30.) Claim 41 depends from Claim 39 and specifies that the chemical moieties are polynucleotides of different sequences. (See the specification pg 5, line 21; pg 6, lines 8-25; pg 8, line 27 to pg 9, line 28.) Claim 42 depends from Claim 41 and specifies that the polynucleotides are DNA. (See the specification pg 2, lines 12-17; pg 6, lines 2-3.)

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-14 and 35-42 stand rejected under 35 U.S.C. § 103 (a) as being obvious over Bares et al. US 5,023,625 in view of Ford et al. US 6,045,759.

ARGUMENTS

Claims 1-14 and 35-42 stand rejected under 35 U.S.C. § 103 (a) as being obvious over Bares et al. US 5,023,625 in view of Ford et al. US 6,045,759.

In making the rejection, the Examiner stated that it would have been obvious to one of ordinary skill in the art to modify the methods of Bares et al. (US 5,023,625; hereafter Bares) for optimizing printing speed with the teachings of Ford et al. (US 6,045,759; hereafter Ford) for priming a dispenser assembly to arrive at the claimed invention. In the following section, the Appellants will demonstrate why the Examiner's *prima facie* case of obviousness is deficient.

In the following section, the Appellants have grouped the Claims as follows:

Group I: Claims 1, 9, 10 and 37;

Group II: Claims 2, 3, and 38;

Group III: Claim 4;

Group IV: Claims 5-8;

Group V: Claims 11-14 and 39- 42; and . . .

Group IV: Claims 35 and 36.

With respect to rejections made under 35 U.S.C. § 103, MPEP § 2142 states:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there

must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

It is respectfully submitted that the Examiner's *prima facie* case of obviousness is deficient because the references have been improperly combined. Furthermore, the combined teachings of the cited prior art fail to render at least some of the claim groups obvious. Below are the contentions of the Applicant with respect to each ground of rejection, with a separate subheading for each group of claims.

Group I: Claims 1, 9-10 and 37

As summarized above, the Examiner's rejection is based on the combined teaching of Bares and Ford. As previously explained in the Applicant's response to the Final Rejection, in making this rejection the Examiner has improperly combined Bares with Ford because Bares and Ford are from non-analogous art.

In the Advisory Action, the Examiner has defended the combined teaching of the references by stating that both references relate to dispensing and they have been cross-classified by the Patent Office. However, as will be demonstrated below, when the relevant case law is applied to the facts of the present application, the only reasonable conclusion is that, despite this asserted cross-classification, one of skill in the art would not combine the teaching of Bares with Ford to arrive at the claimed invention because the references are not suitably analogous and combinable.

As summarized above, two or more references are improperly combined if they are from non-analogous art. With respect to non-analogous art, the MPEP at § 2141 states:

"In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). See also *In re Deminski*, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986); *In re Clay*, 966 F.2d 656, 659, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992) ("A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem."); * *Wang Laboratories Inc. v. Toshiba Corp.*, 993 F.2d 858, 26 USPQ2d 1767 (Fed. Cir. 1993); and *State Contracting & Eng'g Corp. v. Condotte America, Inc.*, 346 F.3d 1057, 1069, 68 USPQ2d 1481, 1490 (Fed. Cir. 2003) (where the general scope of a reference is outside the pertinent field of endeavor, the reference may be considered analogous art if subject matter disclosed therein is relevant to the particular problem with which the inventor is involved).

As will be demonstrated below, Ford is not in the field of the Applicant's endeavor and is not reasonably pertinent to the particular problem with which the inventor of the present claims was concerned. As such, the Applicant respectfully submits that Ford is not a proper reference to combine with Bares because it is non-analogous art to Bares.

The field of the Applicant's endeavor with respect to the presently claimed invention is related to **fluid deposition from a pulse-jet device, e.g., for microarray fabrication.** The field of the Ford reference has no association with microarray fabrication or pulse-jet devices. Instead, Ford is related to histological diagnosis and the study of tissue morphology. The fluid dispensers disclosed by Ford are very similar to an automatic pipette. As such, the technical field of the Ford reference is not in the area of pulse jet deposition, which is the field of the Applicant's endeavor.

Furthermore, Ford is not reasonably pertinent to the particular problem with which the inventor was concerned in making the presently claimed invention. The present invention solves a problem observed by the Applicant in the field of using pulse-jets, e.g., for microarray fabrication. Specifically, the present invention solves a problem observed when bubbles form in a chamber of the pulse-jet, where the presence of the bubbles can interfere with fluid dispensing.

As reviewed above, Ford's disclosure of a method of using an automated pipette-like dispenser has nothing whatsoever to do with pulse jet deposition. According to the Ford disclosure, the automated dispenser aliquots reagent onto a microscope slide that typically has a tissue section or a population of cells already fixed on it. However, the dispenser is taught as dispensing a volume of liquid necessary to completely cover the sample. As such, one of skill in the art at the time of filing of the present application would view Ford as teaching deposition of **macrovolumes** of fluid, e.g., on the order of microliters of fluid.

In contrast, one of ordinary skill in the art at the time the present application was filed would view pulse-jet deposition as being concerned with deposition of micro volumes of fluid, e.g., on the order of picoliters of fluid.

Because of these different applications in terms of the types and/or amounts of fluid that is being deposited, one of skill in the art at the time the present application was filed would not view Ford as being reasonably pertinent to the problem with which the inventor of the present application was concerned.

Furthermore, in addition to the differences in purpose between Ford's type of fluid deposition and pulse jet deposition, there are many structural differences between pulse jet devices and the device taught by Ford which further demonstrate that one of skill in the art would not view Ford's disclosure as being reasonably pertinent to the problem the particular invention solves.

A pulse-jet utilizes a thermoelectric or piezoelectric transducer element in order to eject a volume of fluid through an orifice from a small chamber. In a thermoelectric pulse-jet, an electrical signal to a heating element in a firing chamber causes a bubble to form in the chamber and therefore a drop of fluid to be ejected from the chamber through the orifice. In a similar manner, with a piezoelectric pulse-jet, an electrical signal

to a piezoelectric element causes the element to change physical dimensions, thereby ejecting fluid from the chamber through the orifice.

In contrast, the device taught by Ford requires movement of a barrel to dispense a volume of fluid. Specifically, in the fluid dispenser of Ford, application of downward mechanical force on the barrel expels a predetermined amount of fluid from a dispenser chamber of the dispenser. See Col. 22, lines 28 to 40.

Therefore, significant structural differences exist between pulse-jet devices and the dispenser taught by Ford. Because of these significant structural differences, one of ordinary skill in the art of pulse-jet deposition at the time the application was filed would not have viewed Ford as reasonably pertinent to the problem the presently claimed invention solves.

Accordingly, one of ordinary skill in the art would not look to a reference such as Ford as being reasonably pertinent to solve a problem being experienced with pulse-jets.

In conclusion, Ford is not in the field of the Applicant's endeavor and is not reasonably pertinent to the particular problem with which the inventor of the present claims was concerned. Therefore, in accordance with the guidance provided by the MPEP at § 2141, Ford has been improperly combined with Bares to make the Examiner's asserted prima facie case of obviousness. Accordingly, the Examiner's asserted prima facie case of obviousness is improper and the rejection of the claims of Group I based on this combination, as well as the claims of the remaining Groups discussed further below, may be withdrawn.

Group II: Claims 2, 3 and 38

The claims of this group specify that the striking occurs intermittently multiple times.

In addition to the arguments detailed above for the Claims of Group I, the Appellants further submit that neither Ford nor Bares teach or suggest that the pulse-jet be struck intermittently multiple times.

As such, because the combination of the teachings of Bares and Ford fail to teach or suggest each and every element of these claims, i.e., that the pulse-jet be struck intermittently multiple times, the Appellants respectfully request withdrawal of this rejection.

Group III: Claim 4

Claim 4 requires that the pulse jet be struck in a direction parallel to that of the direction of drop ejection (see FIG. 3, and description thereof; page 7, beginning line 27). This is presented as one embodiment of the instant application that renders the strike effective (see page 8, lines 3-6, and lines 24-26).

In addition to the arguments detailed above for the Claims of Group I, the combined teaching of Bares in view of Ford fails to teach or suggest this particular limitation of Claim 4.

As reviewed above, Bares does not teach striking a pulse-jet, and the Examiner looks to Ford for this element. The portion of Ford cited by the Examiner reads as follows:

To check for a good prime, the customer may flip the dispenser upside-down, tap the dispenser, dislodging any trapped

air, then pressing down on the barrel slowly to move the air bubble past the ball seat.

In Ford, the vague phrase, "tap the dispenser" gives no clear teaching or suggestion for the direction of strike to apply. It is respectfully submitted that, in the absence of any specific teaching, one of ordinary skill in the art would strike the side of a cylindrical dispenser.

As such, no teaching or suggestion can be found in Ford to apply an impulse force in the direction of the ejection of the liquid, as claimed in Claim 4.

Therefore, because the combination of the teachings of Bares and Ford fail to teach or suggest each and every element of Claim 4, i.e., the pulse jet be struck in a direction parallel to that of the direction of drop ejection, the Appellants respectfully request withdrawal of this rejection.

Group IV: Claims 5-8

The claims of this group specify that the striking occurs in a particular rate range (Claims 5 and 6), and energy range (Claims 7 and 8).

In addition to the arguments detailed above for the Claims of Group I, the Appellants further submit that neither Ford nor Bares teach or suggest that the particularly claimed ranges.

The Examiner has asserted that the claimed rate/energy ranges would be obvious in view of Ford. However, as reviewed above, Ford is directed to a pipette fluid dispensing technology, while the claimed invention is directed to a pulse-jet dispensing technology.

As reviewed above, Ford's type of device is concerned with dispensing macrovolumes of fluid while pulse jet devices are concerned with depositing

microvolumes. In addition, there are significant differences between pulse jet devices and pipette devices, such as the pipette device of Ford. For example, pulse-jet devices utilize a thermoelectric or piezoelectric transducer element in order to eject a volume of fluid through an orifice from a small chamber. In contrast, the device taught by Ford requires movement of a barrel to dispense a volume of fluid. Specifically, in the fluid dispenser of Ford, application of downward mechanical force on the barrel expels a predetermined amount of fluid from a dispenser chamber of the dispenser. See Col. 22, lines 28 to 40.

Because Ford's pipette dispenser and the Bares pulse jet device are completely different technologies and the problems encountered with each are different, as evidenced by the above discussion with respect to volumes dispensed by pulse jets and pipette devices, as well as the significant structural differences between these devices, the claimed ranges of rate and energy of the claims of this group are not obvious in view of the teaching of Bares and Ford.

As such, because the combination of the teachings of Bares and Ford fail to teach or suggest the specified ranges with respect to rate and energy found in the claims of this group, the Applicant respectfully requests withdrawal of this rejection.

Group V: Claims 11-14 and 39-42

The claims of this group are drawn to the method of striking the pulse jet, wherein the method is further specified as being a method of fabricating an array of chemical moieties.

Bares fails to teach or suggest using a pulse-jet to fabricate arrays. Ford is directed to automatically dispensing fluids onto a slide, e.g., in an automatic immunostaining system. Col. 8, lines 48 to 50. According to Ford's method, the dispenser is used for histological diagnosis and the study of tissue morphology. The dispenser of Ford is used to automatically aliquot a single volume of reagent to

cover an entire sample already fixed onto a microscope slide. However, nowhere does Ford provide that the dispenser may be used to fabricate arrays of chemical moieties. As such, neither Ford nor Bares teach or suggest a method of fabricating arrays of chemical moieties.

Accordingly, since none of the references teach or suggest the method of fabricating arrays of chemical moieties, Claims 11-14 and 39-42 which are directed to methods of fabricating arrays of chemical moieties are not obvious over Bares in view of Ford. Therefore, the Applicant respectfully requests withdrawal of this rejection.

Group VI: *Claims 35 and 36*

The claims of this group are drawn to the method of striking the pulse jet, wherein the striking improves pulse jet firing ability.

In addition to the arguments detailed above for the Claims of Group I, the Appellants further submit that neither Ford nor Bares teach or suggest that the striking would improve pulse-jet firability. There is simply no comprehension of the problem in either of the references that bubbles may lead to poor pulse jet firing, and as such there can be no teaching or suggestion in the references that striking could improve on pulse-jet firability.

As such, because the combination of the teachings of Bares and Ford fail to teach or suggest each and every element of these claims, i.e., that the striking improves pulse jet firing ability, the Applicant respectfully requests withdrawal of this rejection.

SUMMARY

Claims 1-14 and 35-42 are not obvious under 35 U.S.C. § 103 (a) over Bares et al. US 5,023,625 in view of Ford et al. US 6,045,759 because Bares et al. US 5,023,625 can not be properly combined with Ford et al. US 6,045,759 to make a *prima facie* case of obviousness and, even if these references are combined, they do not teach or suggest all of the elements of the claimed invention.

RELIEF REQUESTED

The Applicant respectfully requests that the rejections of Claims 1-14 and 35-42 under 35 U.S.C. §103 be reversed, and that the application be remanded to the Examiner with instructions to issue a Notice of Allowance.

Respectfully submitted,

Date: September 7, 2005

By:


Bret Field
Registration No. 37,620

AGILENT TECHNOLOGIES, INC.
Legal Department, DL429
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CLAIMS APPENDIX

1. A method comprising dispensing drops from a pulse jet and striking the pulse jet at least once, wherein the pulse jet comprises a chamber and a thermoelectric or piezoelectric ejector in the chamber.
2. A method according to claim 1 wherein the pulse jet is struck intermittently multiple times.
3. The method of claim 2 wherein the pulse jet includes a housing enclosing a chamber and having a discharge opening for drops, and wherein the housing is struck on an outside surface with a member.
4. The method according to claim 3 wherein the housing is struck in a same direction in which drops are ejected from the pulse jet.
5. The method of claim 3 wherein the chamber is struck at a rate of 0.2 to 10 strikes/second.
6. The method of claim 3 wherein the chamber is struck at a rate of 1 to 5 strikes/second.
7. The method according to claim 3 wherein each strike delivers between 10 mJ to 150 mJ.
8. The method according to claim 3 wherein each strike delivers between 50 mJ to 100 mJ.
9. The method according to claim 2 wherein the pulse jet includes a thermoelectric ejector in the chamber.

10. The method according to claim 2 wherein the pulse jet includes a piezoelectric ejector in the chamber.

11. A method of fabricating an array of chemical moieties on a substrate, comprising:

dispensing drops from a pulse jet onto the substrate so as to form the array;
and

intermittently striking the pulse jet multiple times;

wherein the pulse jet comprises a chamber and a thermoelectric or piezoelectric ejector in the chamber.

12. A method according to claim 11 wherein multiple strikes are applied between the dispensing of drops by the pulse jet.

13. A method according to claim 11 wherein the chemical moieties are polynucleotides of different sequences.

14. A method according to claim 13 wherein the polynucleotides are DNA.

35. A method according to claim 1 wherein the striking improves pulse jet firing ability, relative to pulse jet firing absent the striking.

36. A method according to claim 11 wherein the striking improves pulse jet firing reliability, relative to pulse jet firing absent the striking.

37. A method comprising dispensing drops from a pulse jet and striking the pulse jet at least once, wherein the pulse jet comprises a rigid chamber and a thermoelectric or piezoelectric ejector in the chamber.

38. A method according to claim 37 wherein the pulse jet is struck intermittently multiple times.

39. A method of fabricating an array of chemical moieties on a substrate, comprising:

dispensing drops from a pulse jet onto the substrate so as to form the array; and

intermittently striking the pulse jet multiple times;

wherein the pulse jet comprises a rigid chamber and a thermoelectric or piezoelectric ejector in the chamber.

40. A method according to claim 39 wherein multiple strikes are applied between the dispensing of drops by the pulse jet.

41. A method according to claim 39 wherein the chemical moieties are polynucleotides of different sequences.

42. A method according to claim 41 wherein the polynucleotides are DNA.

EVIDENCE APPENDIX

No evidence submitted under 37 CFR §§ 1.130, 1.131 or 1.132 has been relied upon by Appellant in this Appeal.

RELATED PROCEEDINGS APPENDIX

There are no decisions rendered by a court or the Board which would directly affect or be directly affected by, or have a bearing on the Board's decision in the instant appeal.